



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

November 18, 2013


WELL WORK PERMIT
Rework/Horizontal 6A Well

This permit, API Well Number: 47-5101546, issued to CNX GAS COMPANY LLC , is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.



James Martin
Chief

Operator's Well No: SHL6DHS-A
Farm Name: DAGUE, CHARLES W. & ELVIRA
API Well Number: 47-5101546
Permit Type: Rework/Horizontal 6A Well
Date Issued: 11/18/2013

Promoting a healthy environment.

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

WW - 6B
(3/13)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: CNX Gas Company, LLC	494458046	Marshall	Sand Hill	Majorsville
	Operator ID	County	District	Quadrangle

2) Operator's Well Number: SHL6DHS-A Well Pad Name: SHL6

3 Elevation, current ground: 831.06 Elevation, proposed post-construction: 830

4) Well Type: (a) Gas ☒ Oil ☐ Underground Storage ☐

Other ☐

(b) If Gas: Shallow ☒ Deep ☐

Horizontal ☒

5) Existing Pad? Yes or No: Yes

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Marcellus 6201 - 6253 ; thickness 52'; pressure 4100 psi

7) Proposed Total Vertical Depth: 6214.51'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 9111'

10) Approximate Fresh Water Strata Depths: 200'

11) Method to Determine Fresh Water Depth: Seneca Technology nearest offset well

12) Approximate Saltwater Depths: none

13) Approximate Coal Seam Depths: 314-320

14) Approximate Depth to Possible Void (coal mine, karst, other): None encountered (well is drilled)

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: Yes

16) Describe proposed well work: The following well is planned to be re-completed in the previously stimulated Marcellus formation.
A slickwater frac job will be performed with the addition of new perforations in the Marcellus formation.

17) Describe fracturing/stimulating methods in detail:
The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals. See attached list.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 11.10

19) Area to be disturbed for well pad Office of Oil and Gas: 10.61

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Environmental Protection

WW - 6B
(3/13)

20)

CASING AND TUBING PROGRAM

TYPE	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft.</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill -up (Cu. Ft.)</u>
Conductor	20"	New	J-55	99#	113	113	CTS
Fresh Water	13 3/8"	New	J-55	54#	637.8	637.8	585 sxs(133 bbls) CTS
Coal							
Intermediate	9 5/8"	New	J-55	36#	2667	2667	950 sxs (216 bbls) CTS
Production	5 1/2"	New	P-110	20#	9051	9051	1535 sxs (347 bbls) Cement
Tubing							
Liners							

*well
9-4-13*

TYPE	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield</u>
Conductor	20"	26	.438	.25	Type 1	CTS
Fresh Water	13 3/8"	17 1/2	.380	2730	Type 1	585 sxs(133 bbls) CTS
Coal						
Intermediate	9 5/8"	12 3/8	.352	2730	Class A	950 sxs (216 bbls) CTS
Production	5 1/2"	8 3/4	.361	12640	Class A	1535 sxs (347 bbls) Cement
Tubing						
Liners						

PACKERS

Kind:				
Sizes:				
Depths Set:				

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(3/13)

21) Describe centralizer placement for each casing string.

NA-This well has is already drilled.

22) Describe all cement additives associated with each cement type.

NA- well is already drilled

23) Proposed borehole conditioning procedures.

NA - well is already drilled

*Note: Attach additional sheets as needed.

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WV Department of
Environmental Protection

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name CNX Gas Company, LLC OP Code 494458046

Watershed (HUC 10) Wheeling Creek Quadrangle Majorsville

Elevation 831.06 County Marshall District Sand Hill

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes X No _____

Will a pit be used for drill cuttings? Yes _____ No X

If so, please describe anticipated pit waste: none anticipated

Will a synthetic liner be used in the pit? Yes _____ No X If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

- ☐ Land Application
- ☐ Underground Injection (UIC Permit Number _____)
 - ☒ Reuse (at API Number next anticipated well)
 - ☒ Off Site Disposal (Supply form WW-9 for disposal location)
 - ☐ Other (Explain _____)

Will closed loop system be used? yes

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. NA -this is a re-fracture

-If oil based, what type? Synthetic, petroleum, etc. None this is a re-fracture

Additives to be used in drilling medium? none this is a re-fracture

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. none this is a re-fracture

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) _____

-Landfill or offsite name/permit number? see attached sheet

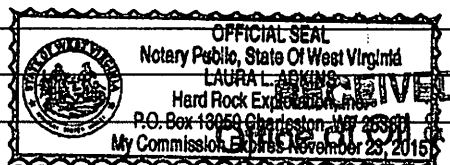
I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature [Signature]

Company Official (Typed Name) Daniel Bitz

Company Official Title Director Environmental Permitting



Subscribed and sworn before me this 4th day of September, 20 13 SEP 05 2013

[Signature]

Notary Public WV Department of Environmental Protection

My commission expires November 23, 2015

Form WW-9

Operator's Well No. SHL6DHS-A**CNX Gas Company, LLC**

Proposed Revegetation Treatment: Acres Disturbed _____ Prevegetation pH _____

Lime 2 to 3 Tons/acre or to correct to pH _____Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)Mulch hay or straw at 2 Tons/acre

Seed Mixtures

Seed Type	Area I lbs/acre
Tall Fescue	40
Ladino Clover	5

Seed Type	Area II lbs/acre
Tall Fescue	40
Ladino Clover	5

Attach:

Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Bill Hardin*

Comments: _____

Title: Oil and Gas InspectorDate: 9-4-13

Field Reviewed?

☒ Yes☐ No**RECEIVED**
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SEP 05 2013

WV Department of
Environmental Protection



Water Management Plan: Primary Water Sources



WMP-00205

API/ID Number:

047-051-01546

Operator:

Consol Energy - SWPA

SHL6DHS-A

Important:

For each proposed primary water source (including source intakes for purchased water sources) identified in your water management plan, and summarized herein, DEP has made an evaluation concerning water availability over the specified date range. DEP's assessment is based on the following considerations:

- Statistical analysis of historical USGS stream gauge data (transferred to un-gauged locations as necessary);
- Identification of sensitive aquatic life (endangered species, mussels, etc.);
- Quantification of known existing demands on the water supply (Large Quantity Users);
- Minimum flows required by the Army Corps of Engineers; and
- Designated stream uses.

Based on these factors, DEP has provided, for each intake location (and origination point for purchased water), a reference gauge location and discharge flow reading which must be surpassed prior to withdrawals. Additionally, DEP has established a minimum passby flow at the withdrawal location which must also be surpassed prior to withdrawals. These thresholds are considered terms of the permit and are enforceable as such.

DEP is aware that some intake points will be used for multiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interpreted as total withdrawal limits for each location over the specified date range regardless of how many wells are supported by that intake.

For all purchased water intakes, determinations of water availability are made at the original source intake location. It is the responsibility of the Oil and Gas Operator, not the seller, to cease withdrawal of water from the seller when flows are less than the minimum gauge reading at the stream gauge referenced by the Water Management Plan in order to protect stream uses.

Note that the determinations made herein are based on the best available data, but it is impossible to predict water availability in the future. While the DEP has carefully established these minimum withdrawal thresholds, it remains the operator's responsibility to protect aquatic life at all times. Approval to withdrawal is contingent upon permission from the land owner. It is the responsibility of the operator to secure and maintain permission prior to any withdrawals.

The operator is reminded that 24-48 hours prior to withdrawing (or purchasing) water, DEP must be notified by email at DEP.water.use@wv.gov.

MODIFICATION Effective: 11/7/2013

Source Summary**MODIFICATION****Effective: 11/7/2013**

WMP- 00205

API Number:

047-051-01546

Operator:

Consol Energy - SWPA

SHL6DHS-A

Purchased Water

Source **West Virginia American Water - Weston Water Treatme** Lewis Owner: **West Virginia American Water**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/29/2013	8/29/2014	5,000,000	500,000	-	-

☒ Regulated Stream? **Stonewall Jackson Dam** Ref. Gauge ID: **3061000** **WEST FORK RIVER AT ENTERPRISE, WV**

Max. Pump rate (gpm): **Min. Gauge Reading (cfs): 170.57** **Min. Passby (cfs)**

DEP Comments:

Source **Bethlehem Water Department** Ohio Owner: **Bethlehem Water Department**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/29/2013	8/29/2014	5,000,000	200,000	-	-

☒ Regulated Stream? **Ohio River Min. Flow** Ref. Gauge ID: **9999999** **Ohio River Station: Willow Island Lock & Dam**

Max. Pump rate (gpm): **Min. Gauge Reading (cfs): 6,468.00** **Min. Passby (cfs)**

DEP Comments: **Bethlehem Water Department purchases all its water from the City of Wheeling. Thresholds are set based on the location of the City of Wheeling's raw water intake.**

Source **Wellsburg Water Department** Brooke Owner: **Wellsburg Water Department**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/29/2013	8/29/2014	5,000,000	200,000	-	-

☒ Regulated Stream? **Ohio River Min. Flow** Ref. Gauge ID: **9999999** **Ohio River Station: Willow Island Lock & Dam**

Max. Pump rate (gpm): **Min. Gauge Reading (cfs): 6,468.00** **Min. Passby (cfs)**

DEP Comments: **This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <http://www.erh.noaa.gov/er/ohrfc/flows.shtml>**

Source	Moundsville Water Board		Marshall	Owner:	Moundsville Water Treatment Plant
Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/29/2013	8/29/2014	5,000,000	2,000,000	-	-
<input checked="" type="checkbox"/> Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam					
Max. Pump rate (gpm):		Min. Gauge Reading (cfs):		6,468.00 Min. Passby (cfs)	
DEP Comments:		This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. http://www.erh.noaa.gov/er/ohrfc/flows.shtml			

Source	Dean's Water Service		Ohio	Owner:	Dean's Water Service
Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/29/2013	8/29/2014	5,000,000	600,000	-	-
<input checked="" type="checkbox"/> Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam					
Max. Pump rate (gpm):		Min. Gauge Reading (cfs):		6,468.00 Min. Passby (cfs)	
DEP Comments:					

Source	Wheeling Water Department		Ohio	Owner:	Wheeling Water Department
Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/29/2013	8/29/2014	5,000,000	17,500	-	-
<input checked="" type="checkbox"/> Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam					
Max. Pump rate (gpm):		Min. Gauge Reading (cfs):		6,468.00 Min. Passby (cfs)	
DEP Comments:		Refer to the specified sation on the National Weather Service's Ohio River forecasts at the following website: http://www.erh.noaa.gov/ohrfc//flows.shtml			

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/29/2013	8/29/2014	5,000,000	720,000	-	-

☒ Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): Min. Gauge Reading (cfs): **6,468.00** Min. Passby (cfs)

DEP Comments: Refer to the specified station on the National Weather Service's Ohio River forecast website: <http://www.erh.noaa.gov/ohrfc//flows.shtml>

Source Detail

MODIFICATION

Effective: 11/7/2013

WMP- 00205

API/ID Number:

047-051-01546

Operator:

Consol Energy - SWPA

SHL6DHS-A

Source ID: 27612

Source Name

West Virginia American Water - Weston Water Treat

Source Latitude: -

West Virginia American Water

Source Longitude: -

HUC-8 Code: 5020002

Drainage Area (sq. mi.): 104.83

County:

Lewis

Anticipated withdrawal start date: 8/29/2013

Anticipated withdrawal end date: 8/29/2014

Total Volume from Source (gal): 5,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

☐ Endangered Species?

☒ Mussel Stream?

☐ Trout Stream?

☐ Tier 3?

☒ Regulated Stream?

Stonewall Jackson Dam

☒ Proximate PSD?

Weston WTP

☒ Gauged Stream?

Reference Gaug

3061000

WEST FORK RIVER AT ENTERPRISE, WV

Drainage Area (sq. mi.)

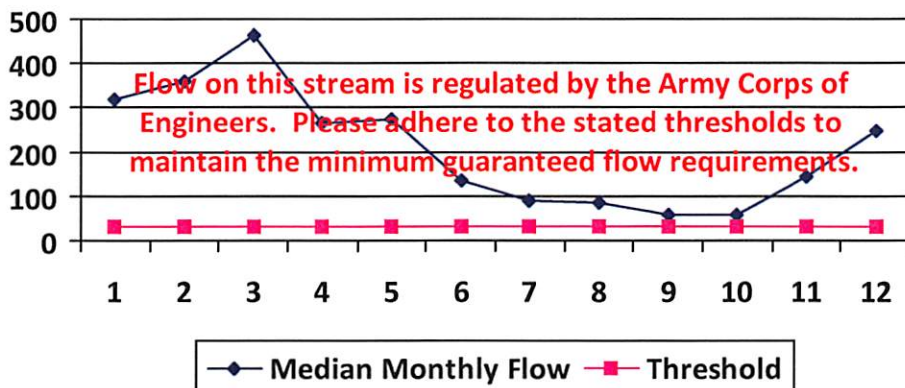
759.00

Gauge Threshold (cfs):

234

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	321.23	-	-
2	361.67	-	-
3	465.85	-	-
4	266.43	-	-
5	273.47	-	-
6	137.03	-	-
7	88.78	-	-
8	84.77	-	-
9	58.98	-	-
10	57.83	-	-
11	145.12	-	-
12	247.76	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs): 24.32

Downstream Demand (cfs): 0.00

Pump rate (cfs):

Headwater Safety (cfs): 8.08

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

Source Detail

MODIFICATION

Effective: 11/7/2013

WMP-00205

API/ID Number:

047-051-01546

Operator:

Consol Energy - SWPA

SHL6DHS-A

Source ID: 27613

Source Name

Bethlehem Water Department

Source Latitude: -

Bethlehem Water Department

Source Longitude: -

HUC-8 Code:

5030106

Drainage Area (sq. mi.):

25000

County:

Ohio

Anticipated withdrawal start date:

8/29/2013

Anticipated withdrawal end date:

8/29/2014

Total Volume from Source (gal):

5,000,000

Max. Pump rate (gpm):

☐ Endangered Species?

☒ Mussel Stream?

☐ Trout Stream?

☐ Tier 3?

☒ Regulated Stream?

Ohio River Min. Flow

☒ Proximate PSD?

City of Wheeling

☒ Gauged Stream?

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

Reference Gaug

9999999

Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.)

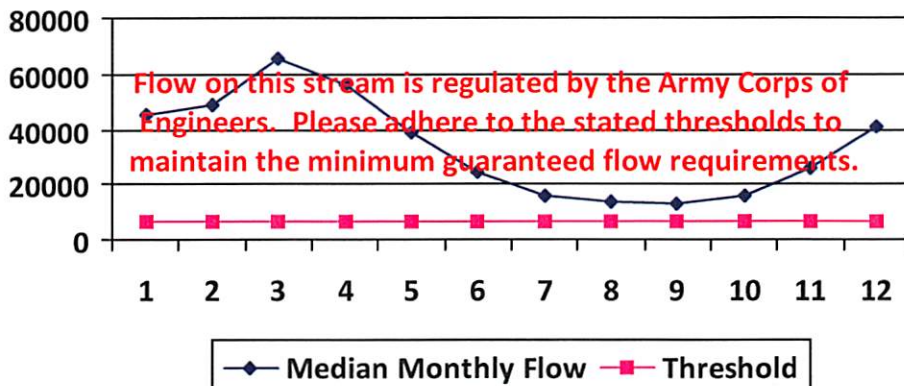
25,000.00

Gauge Threshold (cfs):

6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):

Upstream Demand (cfs):

Downstream Demand (cfs):

Pump rate (cfs):

Headwater Safety (cfs):

0.00

Ungauged Stream Safety (cfs):

0.00

Min. Gauge Reading (cfs):

Passby at Location (cfs):

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

Source Detail

MODIFICATION

Effective: 11/7/2013

WMP-00205

API/ID Number: 047-051-01546

Operator: Consol Energy - SWPA

SHL6DHS-A

Source ID: 27614 Source Name: Wellsburg Water Department
Wellsburg Water Department

Source Latitude: -

Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000

County: Brooke

Anticipated withdrawal start date: 8/29/2013

Anticipated withdrawal end date: 8/29/2014

Total Volume from Source (gal): 5,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm):

☐ Endangered Species? ☒ Mussel Stream?☐ Trout Stream? ☐ Tier 3?☒ Regulated Stream? Ohio River Min. Flow☒ Proximate PSD? Wellsburg Water Department☒ Gauged Stream?

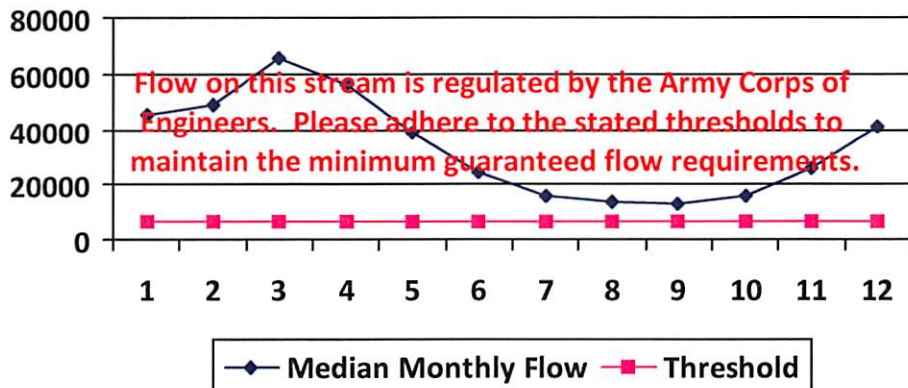
Reference Gaug: 9999999 Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

Water Availability Profile

Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs):

Downstream Demand (cfs):

Pump rate (cfs):

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

Source Detail

MODIFICATION

Effective: 11/7/2013

WMP-00205

API/ID Number: 047-051-01546

Operator: Consol Energy - SWPA

SHL6DHS-A

Source ID: 27615 Source Name: Moundsville Water Board

Source Latitude: -

Moundsville Water Treatment Plant

Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000

County: Marshall

Anticipated withdrawal start date: 8/29/2013

Anticipated withdrawal end date: 8/29/2014

☐ Endangered Species? ☒ Mussel Stream?☐ Trout Stream? ☐ Tier 3?☒ Regulated Stream? Ohio River Min. Flow☐ Proximate PSD?☒ Gauged Stream?

Total Volume from Source (gal): 5,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm):

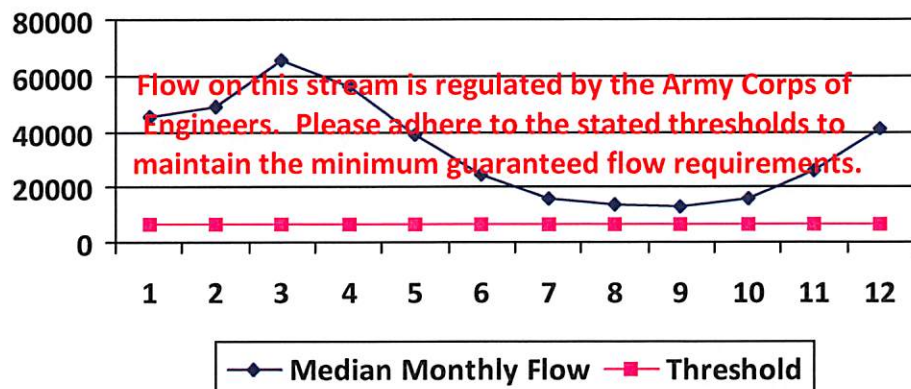
Reference Gaug: 9999999 Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs):

Downstream Demand (cfs):

Pump rate (cfs):

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

Source Detail

MODIFICATION

Effective: 11/7/2013

WMP- 00205

API/ID Number: 047-051-01546

Operator:

Consol Energy - SWPA

SHL6DHS-A

Source ID: 27616 Source Name: Dean's Water Service

Source Latitude: -

Dean's Water Service

Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000

County: Ohio

Anticipated withdrawal start date: 8/29/2013

Anticipated withdrawal end date: 8/29/2014

Total Volume from Source (gal): 5,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

☐ Endangered Species? ☒ Mussel Stream?☐ Trout Stream? ☐ Tier 3?☒ Regulated Stream? Ohio River Min. Flow☐ Proximate PSD?☒ Gauged Stream?

Reference Gaug

9999999

Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.)

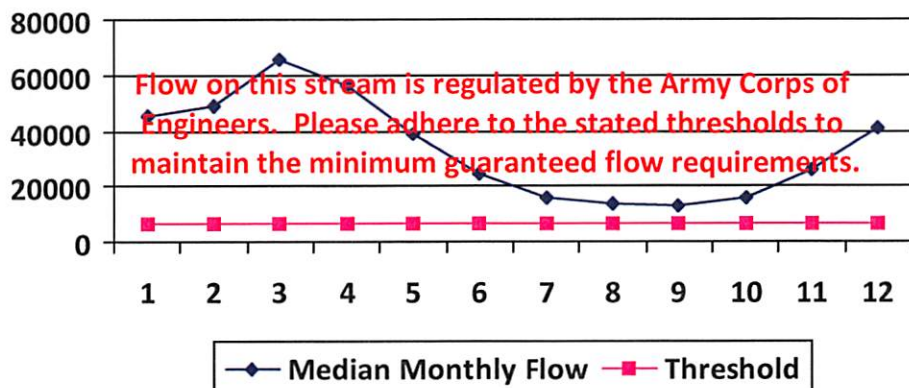
25,000.00

Gauge Threshold (cfs):

6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs): 0.00

Downstream Demand (cfs): 0.00

Pump rate (cfs):

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

Source Detail

MODIFICATION

Effective: 11/7/2013

WMP- 00205

API/ID Number: 047-051-01546

Operator: Consol Energy - SWPA

SHL6DHS-A

Source ID:	27618	Source Name:	Wheeling Water Department	Source Latitude:	-
			Wheeling Water Department	Source Longitude:	-
HUC-8 Code:	5030106				
Drainage Area (sq. mi.):	25000	County:	Ohio	Anticipated withdrawal start date:	8/29/2013
				Anticipated withdrawal end date:	8/29/2014
<input type="checkbox"/> Endangered Species?	<input checked="" type="checkbox"/> Mussel Stream?			Total Volume from Source (gal):	5,000,000
<input type="checkbox"/> Trout Stream?	<input type="checkbox"/> Tier 3?			Max. Pump rate (gpm):	
<input checked="" type="checkbox"/> Regulated Stream?	Ohio River Min. Flow			Max. Simultaneous Trucks:	
<input checked="" type="checkbox"/> Proximate PSD?	Wheeling Water Department			Max. Truck pump rate (gpm):	
<input checked="" type="checkbox"/> Gauged Stream?					

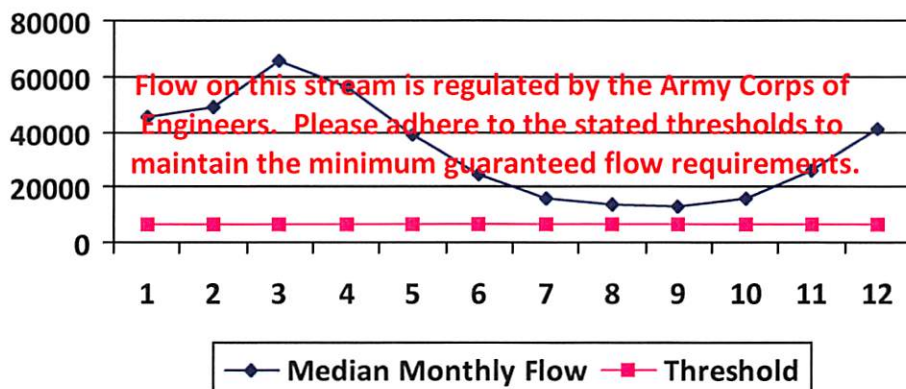
Reference Gaug 9999999 Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.) 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs):

Downstream Demand (cfs):

Pump rate (cfs):

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

Source Detail

MODIFICATION

Effective: 11/7/2013

WMP-00205

API/ID Number: 047-051-01546

Operator: Consol Energy - SWPA

SHL6DHS-A

Source ID: 27619 Source Name: Ohio County PSD
Ohio county PSD

Source Latitude: -

Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000 County: Ohio

Anticipated withdrawal start date: 8/29/2013

Anticipated withdrawal end date: 8/29/2014

Total Volume from Source (gal): 5,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm):

☐ Endangered Species? ☒ Mussel Stream?☐ Trout Stream? ☐ Tier 3?☒ Regulated Stream? Ohio River Min. Flow☒ Proximate PSD? Wheeling Water Department☒ Gauged Stream?

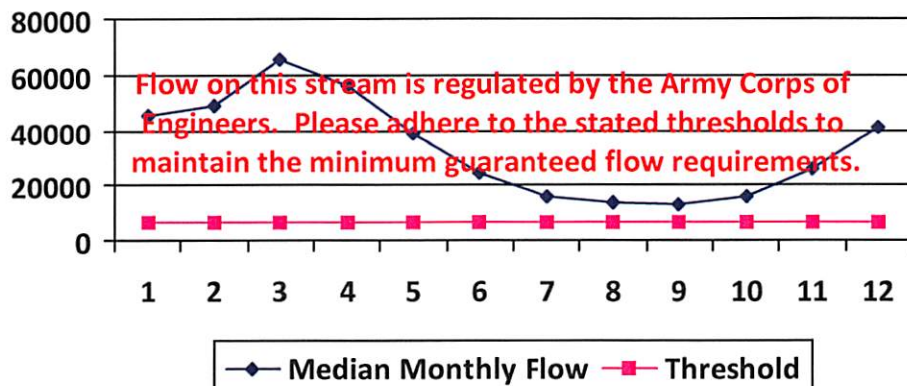
Reference Gaug: 9999999 Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs):

Downstream Demand (cfs):

Pump rate (cfs):

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.



Water Management Plan: Secondary Water Sources



WMP- 00205

API/ID Number

047-051-01546

Operator:

Consol Energy - SWPA

SHL6DHS-A

MODIFICATION

Effective: 11/7/2013

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Multi-site impoundment

Source ID:	27620	Source Name	SHL #3 Pad Tank Farm		Source start date:	8/29/2013
					Source end date:	8/29/2014
Source Lat:	39.971171	Source Long:	-80.556856	County	Marshall	
Max. Daily Purchase (gal)		Total Volume from Source (gal):	5,000,000			
DEP Comments:						

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-1435

WMP- 00205

API/ID Number

047-051-01546

Operator:

Consol Energy - SWPA

SHL6DHS-A

MODIFICATION**Effective: 11/7/2013****Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID:	27621	Source Name	SHL #4 Pad Tank Farm		Source start date:	8/29/2013
					Source end date:	8/29/2014
Source Lat:	39.956739	Source Long:	-80.5515	County	Marshall	
Max. Daily Purchase (gal)				Total Volume from Source (gal):	5,000,000	
DEP Comments:						

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-1436

Source ID:	27622	Source Name	SHL #1 Centralized Freshwater Impoundment		Source start date:	8/29/2013
					Source end date:	8/29/2014
Source Lat:	39.979696	Source Long:	-80.579465	County	Marshall	
Max. Daily Purchase (gal)				Total Volume from Source (gal):	5,000,000	
DEP Comments:						

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-200

WMP- 00205

API/ID Number

047-051-01546

Operator:

Consol Energy - SWPA

SHL6DHS-A

MODIFICATION**Effective: 11/7/2013****Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID:	27623	Source Name	SHL #2 Centralized Waste Pit		Source start date:	8/29/2013
					Source end date:	8/29/2014
Source Lat:	39.966973	Source Long:	-80.561377	County	Marshall	
Max. Daily Purchase (gal)			Total Volume from Source (gal):	5,000,000		
DEP Comments:	WV51-WPC-00001					

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-201

Source ID:	27624	Source Name	SHL #3 Centralized Waste Pit		Source start date:	8/29/2013
					Source end date:	8/29/2014
Source Lat:	39.974133	Source Long:	-80.55527	County	Marshall	
Max. Daily Purchase (gal)			Total Volume from Source (gal):	5,000,000		
DEP Comments:	WV51-WPC-00002					

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-202

WMP- 00205

API/ID Number

047-051-01546

Operator:

Consol Energy - SWPA

SHL6DHS-A

MODIFICATION**Effective: 11/7/2013****Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID:	27625	Source Name	SHL #4 Centralized Waste Pit		Source start date:	8/29/2013
					Source end date:	8/29/2014
Source Lat:	39.963284	Source Long:	-80.562743	County	Marshall	
Max. Daily Purchase (gal)				Total Volume from Source (gal):	5,000,000	
DEP Comments:	WV51-WPC-00003					

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-204**Purchased Water**

Source ID:	27617	Source Name	Bridgeport Ohio Water Department Public Water Provider		Source start date:	8/29/2013
					Source end date:	8/29/2014
Source Lat:	40.08348	Source Long:	-80.736488	County		
Max. Daily Purchase (gal)	200,000			Total Volume from Source (gal):	5,000,000	
DEP Comments:	Please ensure that purchases from this source are approved by, and completed in accordance with, requirements set forth by the State of Ohio Department of Environmental Protection.					

WMP- 00205

API/ID Number

047-051-01546

Operator:

Consol Energy - SWPA

SHL6DHS-A

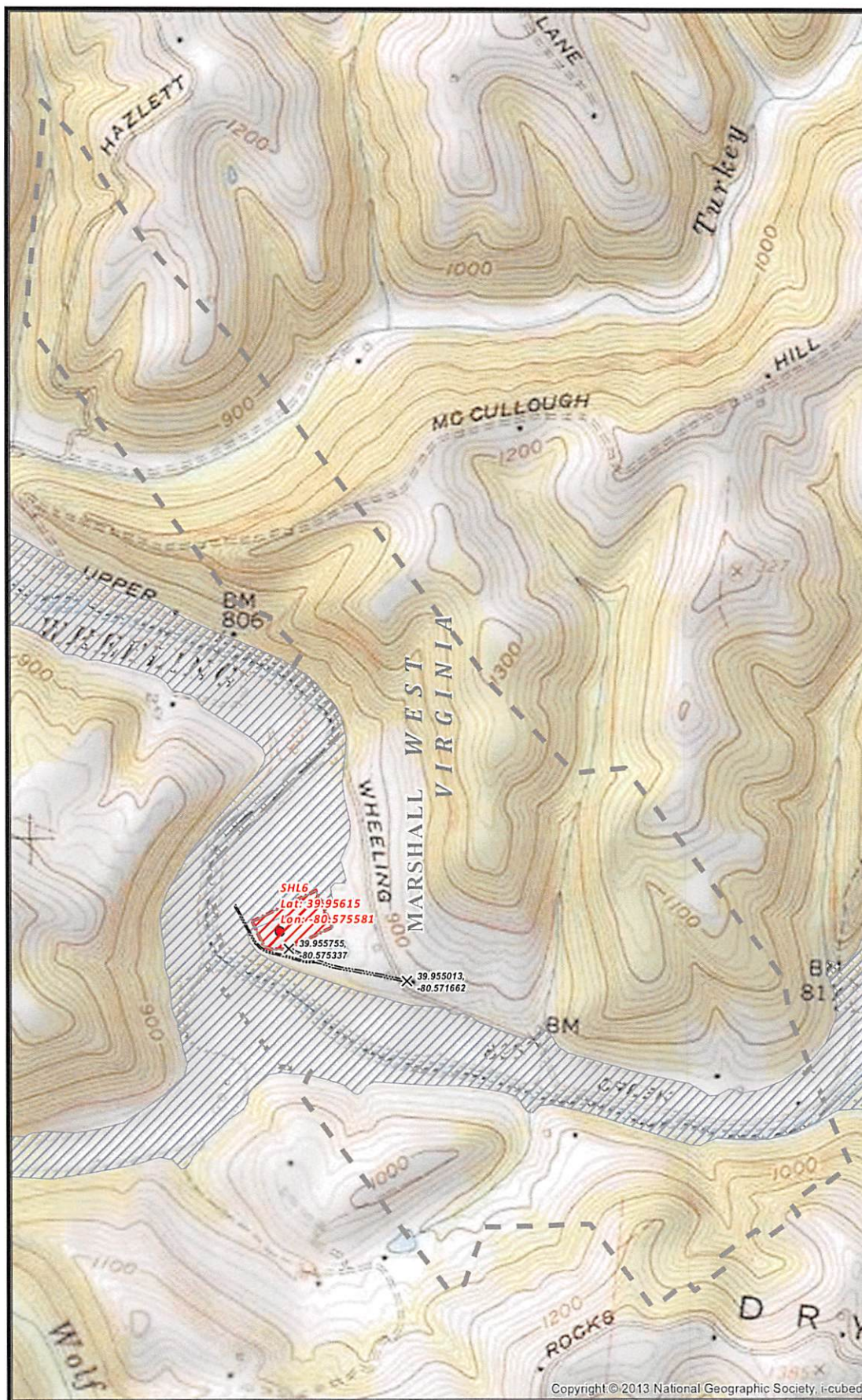
MODIFICATION**Effective: 11/7/2013****Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Recycled Frac Water

Source ID:	27626	Source Name	Various		Source start date:	8/29/2013
					Source end date:	8/29/2014
Source Lat:		Source Long:		County		
Max. Daily Purchase (gal)		Total Volume from Source (gal):	5,000,000			
DEP Comments:	Sources include, but are not limited to, the SHL8 and WEB4 well pads					



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SHL6 SITE SAFETY PLAN - FLOODPLAIN ZONES -

X Road Intersection
 Floodplain
 States
 Proposed Unit
 Counties

0 500 1,000 2,000 Feet

Scale 1" = 1,000'

Projection: NAD_1983_StatePlane_West_Virginia_North_FIPS_4701
Units: Foot US

noble energy

Date: 9/3/2013

Author:
Christopher Glover

Disclaimer: All data is licensed for
use by Noble Energy Inc. use only.

2/5

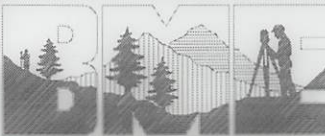
LEGEND

- TOPO MAP POINT
- WELL
- ALL ARE POINTS UNLESS OTHERWISE NOTED.
- WATER SOURCE
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- WELL REFERENCE
- PROPOSED HORIZONTAL WELL
- ROAD
- STREAM CENTER LINE
- EXISTING WELLS



LINE	BEARING	DISTANCE
R1	S 52°24'32" W	266.45'
R2	S 06°40'33" W	229.25'
R3	S 19°26'11" E	296.47'

SURFACE HOLE LOCATION (SHL)	APPROX. LANDING POINT	BOTTOM HOLE LOCATION (BHL)
UTM 17 N:4422982.750 E:536195.276	UTM 17-NAD83 N:4422794.492 E:536285.385	UTM 17-NAD83 N:4422170.335 E:536772.199
NAD27, WV NORTH N:532168.179 E:1698473.961	NAD27, WV NORTH N:531548.411 E:1698525.139	NAD27, WV NORTH N:529473.798 E:1700088.472
LAT/LOG DATUM-WGS84 LAT:39°57'22.35" LON:80°34'31.46"	LAT/LOG DATUM-WGS84 LAT:39°57'16.23" LON:80°34'30.70"	LAT/LOG DATUM-WGS84 LAT:39°56'55.91" LON:80°34'10.31"



Blue Mountain Engineering
11023 MASON DIXON HIGHWAY
BURTON, WV 26562
PHONE: (304) 662-6486

- NOTES:
- There are no dwellings within 200' of proposed well.
 - Proposed well is greater than 100' from the mineral line
 - It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. The location of the boundary lines, as shown, are based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.

FILE #: SHL6DHS
DRAWING #: SHL6DHS
SCALE: 1" = 1000'
MINIMUM DEGREE OF ACCURACY: 1/2500
PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: *[Signature]*
R.P.E.: _____ L.L.S.: P.S. No. 2000



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304



DATE: AUGUST 28, 2013
OPERATOR'S WELL #: SHL6DHS-A
SERIAL No.: WV0510580HS
API WELL #: 47 051 01546 HGA
STATE COUNTY PERMIT

Well Type: ☐ Oil ☐ Waste Disposal ☒ Production ☐ Deep
☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: WHEELING CREEK ELEVATION: 831.06'
COUNTY/DISTRICT: MARSHALL / SAND HILL QUADRANGLE: MAJORSVILLE, WV-PA 7.5'
SURFACE OWNER: CHARLES W. & ELVIRA H. DAGUE ACREAGE: 47.739±
OIL & GAS ROYALTY OWNER: SEE ABOVE GAS LESSORS CHART ACREAGE: 216.203±
DRILL ☐ CONVERT ☐ DRILL DEEPER ☐ REDRILL ☐ FRACTURE OR STIMULATE ☒
PLUG OFF OLD FORMATION ☐ PERFORATE NEW FORMATION ☐ PLUG & ABANDON ☐
CLEAN OUT & REPLUG ☐ OTHER CHANGE ☐ (SPECIFY): _____
TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,136'± TMD: 9,222'±
WELL OPERATOR CNX Gas Company LLC DESIGNATED AGENT KENT WRIGHT
Address 200 EVERGREENE Dr. Address ONE ENERGY DRIVE
City WAYNESBURG State PA Zip Code 15370 City JANE LEW State WV Zip Code 26378